

Office of Fossil Energy

FY 2007 Budget Request

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Assistant Secretary

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TAPPING THE FULL POTENTIAL OF AMERICA'S TRADITIONAL ENERGY RESOURCES

Fossil Energy Research & Development

At the core of the Office of Fossil Energy's mission are two fundamental objectives:

- ✓ To ensure America's **readiness to respond** to short-term energy supply disruptions; and
- ✓ To provide the nation with the best opportunity to **tap the full potential** of its abundant fossil energy resources in an environmentally sound and affordable manner



TAPPING THE FULL POTENTIAL OF AMERICA'S TRADITIONAL ENERGY RESOURCES

Meeting the President's Priorities

Our Priorities Respond to 3 Presidential Initiatives:

Clear Skies

Better pollution control technologies to meet President's "3P" mandate and save ratepayers billions in added costs

Climate Change

Low-cost carbon sequestration to expand climate change options

Higher-efficiency power plants (gasification & fuel cells) to reduce carbon dioxide emissions

"Zero Emissions Power Plant" (*FutureGen*) that links high-efficiencies with carbon sequestration and hydrogen production

Energy & Economic Security

Strategic Petroleum Reserve/Heating Oil Reserve at full readiness

Hydrogen from coal to expedite the transition to the "hydrogen economy"

Protecting the Future of Coal

A Commitment to Clean, Affordable Power from America's Most Abundant Energy Resource

Coal Technology Program **FY 2007 Request: \$344.1 Million**

Includes FutureGen, Clean Coal Power Initiative, Carbon Sequestration, Other Supporting R&D Programs, Hydrogen from Coal, and Fuel Cells R&D

Distribution of funds varies from FY 2006 to achieve maximum program benefit in a disciplined budget environment



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Protecting the Future of Coal

FutureGen **FY 2007 Request: \$54.0 Million**

FutureGen is an initiative to build the world's first zero emissions, coal-based hydrogen and electric power production plant

Supported by R&D efforts in carbon sequestration, hydrogen and oxygen separation, advanced turbines, fuel cells, and gasification-related technologies

FY07 Activities: Support detailed plant design and procurement activities, in addition to continuation of ongoing permitting, preliminary design, and site characterization efforts



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Protecting the Future of Coal

Clean Coal Power Initiative **FY 2007 Request: \$5.0 Million**

- ✓ **Round 1 Competition: 8 Projects (2 withdrawn), \$1.3 Billion**
Emphasis: Pollution controls, efficiency improvements for existing plants
- ✓ **Round 2 Competition: 4 Projects, \$1.8 Billion**
Emphasis: Next generation coal-fired power plants (e.g., integrated gasification combined cycle, multipollutant control systems, etc.)

FY07 Activities: Continuation of projects selected in prior competitive CCPI solicitations



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Protecting the Future of Coal

Fuels and Power Systems Program **FY 2007 Request: \$221.7 Million**

✓ **Includes technology developed for existing plants, advanced systems, and zero emission plants (e.g., FutureGen)**

- Carbon Sequestration
- Fuels (Hydrogen from Coal)
- Innovations for Existing Plants
- IGCC (Integrated Gasification Combined Cycle)
- Advanced Turbines
- Advanced Research



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Protecting the Future of Coal

Providing New Options to Meet the Challenge of
Climate Change

Carbon Sequestration **FY 2007 Request: \$74.0 Million**

- ✓ **Core Program:** Increasing emphasis on carbon capture & sequestration
 - CO₂ capture technology R&D
 - CO₂ storage (focus on geologic storage)
 - Measurement, monitoring and verification technology R&D
- ✓ **Regional Partnerships:** National network of 7 partnerships; cooperative effort of DOE, states, universities, and industry to identify and plan for sequestration approaches most suited to a region



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Protecting the Future of Coal

Carbon Sequestration (cont'd)

- ✓ **Carbon Sequestration Leadership Forum:** Ministerial-level panel focused on data gathering, information exchange, and joint projects in carbon sequestration

FY07 Activities: Phase II Regional Partnerships will continue field validation experiments involving CO₂ injection and monitoring, mitigation, and verification operations in saline reservoirs, depleted oil and gas fields, and coalbed methane seams; additional research will address systems to lower the costs of CO₂ capture; Weyburn project Phase II; support of CSLF and FutureGen



President's Hydrogen Initiative

Producing Tomorrow's Clean Fuels in a Coordinated Effort with the Offices of Energy Efficiency, Nuclear Energy, and the Dept. of Transportation

Hydrogen-from-Coal **FY 2007 Request: \$22.1 Million**

- ✓ **Coal fuels research focusing on hydrogen**

FY07 Plan: Begin establishing feasibility of coal-to-hydrogen technologies, and advanced H₂/CO₂ separation

Fuel Cells – Hydrogen Use in the Power Sector

FY 2007 Request: \$63.4 Million

- ✓ **Focus is on reducing costs of fuel cells for distributed power**

FY07 Priority: Continue the successful and highly promising work of the Solid State Energy Conversion Alliance (SECA) to develop ultra-low cost (\$400 per kilowatt) solid oxide fuel cells



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Protecting the Future of Coal

Other Supporting Coal R&D

FY 2007 Request: \$111.7 Million

- ✓ **Innovations for Existing Plants (\$16.0 Million):** Improved, lower cost *Clear Skies* technologies
 - Mercury control R&D
 - Low Cost NO_x control R&D
- ✓ **Advanced Power Systems (\$66.8 Million):** Advanced, high efficiency systems for emission-free power plants
 - IGCC (Integrated Gasification Combined Cycle)
 - Advanced Turbines (principally for IGCC applications)
- ✓ **Advanced Research (\$28.9 Million):** University research, new materials, computational technologies, etc.



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Oil and Gas Activities

Alaska Natural Gas Pipeline

- ✓ **Federal Coordinator:** Office of Fossil Energy charged with establishing the Office of Federal Coordinator, facilitating interagency cooperation, and establishing loan guarantee program
- ✓ **Loan Guarantee:** Administer program up to 80% of total project cost, including interest during construction; this authority shall not exceed \$18 billion

Import and Export of Natural Gas

- ✓ **Authorizations:** The Natural Gas Act of 1938, as amended, requires an authorization to market, trade, or use foreign natural gas or to export domestic gas to another country
- ✓ **Monthly Reporting:** Natural gas trade including LNG



Rocky Mountain Oilfield Testing Center

- ✓ **Conduct Field Testing on Promising Technologies**

Maintaining America's Energy Readiness

Strategic Petroleum Reserve **FY 2007 Request: \$155.4 Million**

✓ **Maintaining America's Oil Stockpile**

SPR reached its highest crude oil inventory level of 700 MMB in August 2005
Energy Policy Act directs DOE to fill the SPR to one billion barrels and select sites for this expansion

Northeast Home Heating Oil Reserve **FY 2007 Request: \$5.0 Million**

✓ **Ready to Respond to Fuel Oil Emergencies in the Northeast**

Established in 2000 as an “emergency buffer” that can supplement commercial supplies

Currently with 2 million barrels of heating oil at leased commercial terminals



Naval Petroleum and Oil Shale Reserves

FY 2007 Request: \$18.8 Million

FY 2007 Plan: Continue to operate NPR #3 -Teapot Dome in Wyoming

Fossil Energy Budget

(Dollars in Thousands)

		FY2007 Request
Research and Development	President's Coal Research Initiative	
	Clean Coal Power Initiative	\$4,957
	FutureGen	54,000
	Fuels and Power Systems	
	Sequestration	73,971
	Other Supporting Coal R&D	111,712
	Coal-to-Hydrogen	22,127
	Program Direction	13,942
	Total	280,709
	Fuel Cells	63,352
	Natural Gas	\$0
	Oil Technology	\$0
	Other R&D/Prog. Direction/Mgmt.Support	\$125,625
	Total, Research and Development	\$469,686
Petroleum Reserves	Strategic Petroleum Reserve – Facilities	\$155,430
	Home Heating Oil Reserve	4,950
	Naval Petroleum Reserves/Elk Hills School Lands	18,810
	Total, Petroleum Reserves	\$179,190
Total Fossil Energy Budget		\$648,876

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**For More Information:
www.fossil.energy.gov**



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